ABSTRACT OF THE DISCLOSURE

A position/orientation detecting device for detecting a three-dimensional position/orientation of an object such as a workpiece in a stereo mode of highly reliable determination of corresponding images, which is suitable for use to be combined with a robot to constitute an object picking apparatus. Pictures of workpieces are taken by video cameras. Two-dimensional taught models are created by model creating means and stored as model information, and the positions of three or more reference points are determined by reference point position setting means. Object detecting sections detect images of workpieces using the model information. A crresponding image determining section determines corresponding images, using models or images which are prepared by performing geometrical transformation (represented by a set of parameters) on the two-dimensional taught models or the two-dimensional images. A position/orientation calculating section obtains a three-dimensional position of each of the reference points on each of the workpieces, and thereby obtains the position/orientation of each of the workpieces.